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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,754	03/19/2004	Igor V. Belousov	085.10989-US(03-502)	7681

34704 7590 07/20/2009

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EXAMINER	
BAND, MICHAEL A	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
07/20/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,754	BELOUSOV ET AL.	
	Examiner	Art Unit	
	MICHAEL BAND	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,14-23 and 26-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,14-23 and 26-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 7, 10, 14, 16-17, 21-22, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent No. 4,716,340) in view of Seimers (US Patent No. 4,805,833).

With respect to claims 1-3, 10, 14, 16-17, and 26-27, Lee et al discloses a sputter magnetron (i.e. second component) [47] and an external plasma gun (i.e. first component) [14] in a vacuum chamber [11], where said sputter gun [13] comprises a DC potential attached to a target support [55] and target [53] and another DC potential attached to the plasma gun [14] (abstract; fig. 1). The DC potential being pulse modulated relates to intended use, with it being known to use a pulsed DC power source for sputtering. A sputter target sleeve [51] acts as shield from the plasma plume. Plasma from the external sputter gun [14] is used to sputter material from the target [53] via the electromagnetic field [59] (col. 4, lines 20-22). The sputter magnetron [47] and metal target [53] encircle the plasma (i.e. ions) from the plasma gun [14] (col. 3, lines 53-62). Lee et al also discloses the plasma gun [14] comprises components of ionizable gas such as argon, nitrogen, or the like for the ions (col. 3, lines 23-31). Lee et al further

discusses when the sputtering operation is to take place that the vacuum chamber [11] is pumped down to $1x10^{-5}$ torr or lower (col. 3, lines 26-28). However Lee et al is limited in that evaporating a first component by the plasma gun is not suggested.

Seimers teaches a plasma gun for depositing titanium alloys using gases such as helium, hydrogen, argon, nitrogen, and oxygen (abstract; col. 2, lines 39-42; col. 4, lines 43-49). Seimers also discusses type of titanium alloys being Ti_3Al and Ti-6Al-4V, with Ti_3Al rated at a temperature of 1700-1800° F (1200-1255° K) and Ti-6Al-4V rated to a temperature of 1000°F (811o K) (col. 2, lines 64-68). Seimers further teaches the plasma gun having a flame since the plasma reaches a temperature of about 10000° K to 12000° K, with the powder (i.e. titanium) introduced into the plasma (col. 4, lines 58-62; col. 6, lines 15-18). Since the boiling point of titanium is 3560° K and the titanium alloys are rated up to 1800°F (1255° K) and Seimers teaches the powder combined with the plasma flame, it is expected that at least some portion of the titanium is vaporized due to the extreme heat. Seimers also recognizes that the titanium alloy may be used in aircraft engines (col. 1, lines 28-34).

Since the prior art of Seimers recognizes the equivalency of argon, helium, and nitrogen in the field of plasma guns, it would have been obvious to one of ordinary skill in the art to replace the plasma gun of Lee et al with the plasma gun of Seimers as it is merely the selection of functionally equivalent plasma guns recognized in the art and one of ordinary skill would have a reasonable expectation of success in doing so.

With respect to claim 7, modified Lee et al further discloses depositing a film via sputtering (abstract). It is known that prior to adhering a layer onto a workpiece, to clean/polish/etch in order to provide a superior surface for the deposited layer to adhere

too. During this cleaning/polishing/etching, workpiece material will inherently be removed.

3. Claims 4-6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent No. 4,716,340) and Seimers (US Patent No. 4,805,833) as applied to claims 1 and 14, and further in view of Segal et al (USPGPub 2003/0052000) and Lederich et al (US Patent No. 4,415,375).

With respect to claims 4-6 and 15, the references are cited as discussed for claims 1 and 14. However modified Lee et al is limited in that while a metal sputter target is disclosed, a specific metal is not suggested.

Segal et al teaches a sputter target comprising one or more metals of Be, B, C, Mg, Al, Si, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, Se, Sr, Y, Zr, Nb, Mo, Ru, Pd, Ag, In, Sn, Sb, Ba, La, Hf, Ta, W, Ir, Pt, Au, Bi, Ce, Nd, Sm, Eu, Gd, Tb, or Dy (abstract; p. 1, para 0004 and 0010-0011).

It would have been obvious to one of ordinary skill in the art to incorporate the sputter target materials taught by Segal et al for the metal sputter target of modified Lee et al since modified Lee et al fails to specify a particular metal and one of ordinary skill in the art would have a reasonable expectation for success in making the modification since Segal et al has shown success in making a metal sputter target with the specified materials.

However modified Lee et al is further limited in that while a deposited compound of titanium, aluminum, vanadium, molybdenum, zirconium, and their composites is disclosed, a specific deposition material is not suggested.

Lederich et al teaches a transient titanium alloys having a composition of Ti-8Al-1Mo-1V (abstract). Lederich et al also depicts in fig. 1 a disk (i.e. target) composed of Ti-8Al-1Mo-1V. Lederich et al cites the advantage of this alloy as parts and structures formed and restored from said alloy retain the strength and structural integrity of the base alloy.

It would have been obvious to one of ordinary skill in the art to use form a transient titanium alloy of Lederich et al from the deposition materials in modified Lee et al to gain the advantages of retention of base alloy strength and structural integrity.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent No. 4,716,340) and Seimers (US Patent No. 4,805,833) as applied to claim 7, and further in view of Ray et al (US Patent No. 6,986,381).

With respect to claim 8, the references are cited as discussed for claim 7. However modified Lee et al is limited in that while there must exist some bond strength between the substrate and the film, no specific value is suggested.

Ray et al teaches metallic alloys with improved surface quality, structural integrity and mechanical properties fabricated in refractory metals (abstract) such as nickel, cobalt, and iron base superalloys, stainless steel alloys, titanium alloys, titanium aluminide alloys, zirconium alloys, and zirconium aluminide alloys (col. 5, lines 55-62). Ray et al also provides a more detailed list of the components in a coating in Table 3 (col. 15). A flexural strength (i.e. bend strength) of 40,000 psi (40 ksi) to 75,000 psi (75 ksi) is also described (col. 6, lines 32-35), with these alloys typically having a yield strength (i.e. bond strength) in excess of 100 ksi (col. 2, lines 27-30). Ray et al cites the

advantage of using refractory metal alloys due to their hard and wear resistant coating properties (col. 1, lines 10-24).

It would have been obvious to one of ordinary skill in the art to apply the refractory metal alloy properties taught in Ray et al for modified Lee et al to gain the advantages of a superior hard and wear resistant coating.

It has been held that in the case where claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent No. 4,716,340), Seimers (US Patent No. 4,805,833), and Ray et al (US Patent No. 6,986,381) as applied to claim 8, and further in view of Gabriele et al (US Patent No. 6,875,318).

With respect to claim 9, the references are cited as discussed for claim 8. It is expected that the workpiece be larger than metallic coating. However modified Lee et al is limited in that while the thickness layer of the metal is present, it is not specified as to an exact thickness for all layers.

Gabriele et al teaches a method of coating a substrate by leveling the surface of the substrate by physical vapor deposition (PVD) of a metallic coating (abstract), in addition to ion beam, e-beam evaporation, and arc deposition also suitable deposition methods (col. 4, lines 59-66). Gabriele et al further teaches suitable metallic materials for deposition as titanium, zirconium, chromium, gold, silver, platinum, copper, aluminum, tin, molybdenum, boron, graphite, tantalum, tungsten, hafnium, and combinations thereof, with possible alloys being titanium-zirconium, titanium-aluminum-

vanadium-nickel-chrome-copper-silver, and aluminum titanium (col. 5, lines 60-67). A thickness of the metallic layer of from about 0.1 millimeter to about 3 millimeter is stated (col. 2, lines 41-45).

It has been held that obviousness may sometimes be based on the common knowledge of persons skilled in the art without relying on a specific suggestion in a particular reference. *In re Bozak*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Since both references teach depositing, via sputtering, combinations of tungsten and titanium in specified thicknesses of the alloy layers, it would have been obvious to one of ordinary skill in the art to deposit the said combination of tungsten and titanium from 10 nm to 2 mm as this merely represents a user inputted variable.

6. Claims 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent No. 4,716,340) and Seimers (US Patent No. 4,805,833) as applied to claims 14 and 21, and further in view of Nulman et al (US Patent No. 6,231,725).

With respect to claims 18 and 23, the references are cited as discussed for claims 14 and 21. However modified Lee et al is limited in that a second sputter target of a different composition from the first sputter target is not specified.

Nulman et al teaches an apparatus for sputtering material onto a workpiece with the aid of a plasma (abstract), where figs. 2 and 3 depict a biased first target [110], a biased second target [500], and a biased workpiece [112]. Nulman et al also adds that both targets and workpiece can be biased with distinct DC power sources [111], [121] [400] as depicted in fig. 3 (col. 3, lines 61-63; col. 4, lines 15-16 and lines 36-39). Furthermore Nulman et al states that the first target and second target may be

composed of different materials (col. 8, lines 8-12). Nulman et al cites the advantage of this design as increasing deposition uniformity (col. 3, lines 1-6).

It would have been obvious to one of ordinary skill in the art to use multiple compositional sputter targets using different voltage biases taught in Nulman et al for the sputter device of modified Lee et al to gain the advantage of increased deposition uniformity.

7. Claims 19 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent No. 4,716,340) in view of Seimers (US Patent No. 4,805,833) and Harker (US Patent No. 5,084,090).

With respect to claims 19 and 28, Lee et al discloses a sputter magnetron (i.e. second component) [47] and an external plasma gun (i.e. first component) [14] in a vacuum chamber [11], where said sputter gun [13] comprises a DC potential attached to a target support [55] and target [53] and another DC potential attached to the plasma gun [14] (abstract; fig. 1). The DC potential being pulse modulated relates to intended use, with it being known to use a pulsed DC power source for sputtering. A sputter target sleeve [51] acts as shield from the plasma plume. Plasma from the external sputter gun [14] is used to sputter material from the target [53] via the electromagnetic field [59] (col. 4, lines 20-22). The sputter magnetron [47] and metal target [53] encircle the plasma (i.e. ions) from the plasma gun [14] (col. 3, lines 53-62). Lee et al also discloses the plasma gun [14] comprises components of ionizable gas such as argon, nitrogen, or the like for the ions (col. 3, lines 23-31). Lee et al further discusses when the sputtering operation is to take place that the vacuum chamber [11] is pumped down

to $1x10^{-5}$ torr or lower (col. 3, lines 26-28). However Lee et al is limited in that evaporating a first component by the plasma gun is not suggested.

Seimers teaches a plasma gun for depositing titanium alloys using gases such as helium, hydrogen, argon, nitrogen, and oxygen (abstract; col. 2, lines 39-42; col. 4, lines 43-49). Seimers also discusses type of titanium alloys being Ti_3Al and Ti-6Al-4V, with Ti_3Al rated at a temperature of 1700-1800° F (1200-1255° K) and Ti-6Al-4V rated to a temperature of 1000°F (811o K) (col. 2, lines 64-68). Seimers further teaches the plasma gun having a flame since the plasma reaches a temperature of about 10000° K to 12000° K, with the powder (i.e. titanium) introduced into the plasma (col. 4, lines 58-62; col. 6, lines 15-18). Since the boiling point of titanium is 3560° K and the titanium alloys are rated up to 1800°F (1255° K) and Seimers teaches the powder combined with the plasma flame, it is expected that at least some portion of the titanium is vaporized due to the extreme heat. Seimers also recognizes that the titanium alloy may be used in aircraft engines (col. 1, lines 28-34).

Since the prior art of Seimers recognizes the equivalency of argon, helium, and nitrogen in the field of plasma guns, it would have been obvious to one of ordinary skill in the art to replace the plasma gun of Lee et al with the plasma gun of Seimers as it is merely the selection of functionally equivalent plasma guns recognized in the art and one of ordinary skill would have a reasonable expectation of success in doing so.

However modified Lee et al is further limited in that the first component deposited via ion-enhanced electron beam PVD is not suggested.

Harker teaches vacuum processing of reactive metal (abstract), where said processing is by an electron beam or plasma gun (col. 2, lines 28-42).

Since the prior art of Harker recognizes the equivalency of electron beam and plasma gun in the field of vacuum processing metals, it would have been obvious to one of ordinary skill in the art to replace the plasma gun of modified Lee et al with the electron beam of Harker as it is merely the selection of functionally equivalent energy beams recognized in the art and one of ordinary skill would have a reasonable expectation of success in doing so.

8. Claim 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent No. 4,716,340), Seimers (US Patent No. 4,805,833), and Harker (US Patent No. 5,084,090) as applied to claim 20 above, and further in view of Nulman et al (US Patent No. 6,231,725).

With respect to claim 20, the references are cited as discussed for claim 19. However modified Lee et al is limited in that a second sputter target of a different composition from the first sputter target is not specified.

Nulman et al teaches an apparatus for sputtering material onto a workpiece with the aid of a plasma (abstract), where figs. 2 and 3 depict a biased first target [110], a biased second target [500], and a biased workpiece [112]. Nulman et al also adds that both targets and workpiece can be biased with distinct DC power sources [111], [121] [400] as depicted in fig. 3 (col. 3, lines 61-63; col. 4, lines 15-16 and lines 36-39). Furthermore Nulman et al states that the first target and second target may be composed of different materials (col. 8, lines 8-12). Nulman et al cites the advantage of this design as increasing deposition uniformity (col. 3, lines 1-6).

It would have been obvious to one of ordinary skill in the art to use multiple compositional sputter targets using different voltage biases taught in Nulman et al for

the sputter device of modified Lee et al to gain the advantage of increased deposition uniformity.

Response to Arguments

103 Rejections

9. Applicant's arguments filed 4/29/2009 have been fully considered but they are not persuasive.

10. On p. 3-4, the Applicant argues that neither the equivalence of the gases nor plasma guns has been established. The Applicant also argues that even if the plasma guns were equivalent does not entail depositing an additional material. The Applicant also argues that the plasma spray of Seimers operates at a significantly greater pressure than Lee et al, resulting in the two references being incompatible.

The Examiner respectfully disagrees. The equivalency of the plasma guns has been established. The plasma gun of Lee et al utilizes argon or nitrogen gas (col. 3, lines 23-31), with Seimers teaching a plasma gun utilizing the same gases of argon or nitrogen (abstract; col. 2, lines 39-42; col. 4, lines 43-49) to deposit titanium and titanium alloys (col. 2, lines 64-68; col. 4, lines 58-62; col. 6, lines 15-18). Therefore both references teach a plasma gun using nitrogen or argon gases, with the Seimers reference teaching that titanium can also be used in said plasma gun, thus the equivalency of the plasma guns has been established. Regarding the pressure difference, as the Applicant has pointed out, Seimers teaches the plasma gun operating at a higher pressure than the chamber pressure of Lee et al. The plasma gun must operate at a higher pressure than the chamber pressure due to basic principles of gas

diffusion; if the plasma gun operated at a lower pressure than the chamber, all of the deposition material from the chamber would get sucked back into the plasma gun.

11. On p. 4-5, the Applicant argues that the Office has failed to articulate the nature of the combination (e.g. which material is being used). The Applicant also argues that no motivation ahs been given for the combination. The Applicant also argues that no expectation of success has been given. The Applicant also argues that the Office has failed to articulate the nature of the combination.

The Examiner respectfully disagrees. As stated above, modified Lee et al states that a sputter target is used but does not teach a particular material for the sputter target. "Segal et al teaches a sputter target comprising one or more metals of Be, B, C, Mg, Al, Si, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, Se, Sr, Y, Zr, Nb, Mo, Ru, Pd, Ag, In, Sn, Sb, Ba, La, Hf, Ta, W, Ir, Pt, Au, Bi, Ce, Nd, Sm, Eu, Gd, Tb, or Dy (abstract; p. 1, para 0004 and 0010-0011)", thus the sputter target is taught to be an alloy of Ti-Al-Mo-V. Therefore the combination of modified Lee et al and Segal et al contemplate using one or all of the materials listed above as sputter target material. The motivation/expectation of success has been given since Lee et al does not teach a particular sputter target material and Segal et al demonstrates that a sputter target can encompasses one or all of the above materials, which is then incorporated into modified Lee et al. Lederich et al is solely used to teach a specific alloy of the sputter target, with the benefit of said specific alloy being to retain strength and structural integrity. Regarding the Office's failed articulation of the combination of references, the Office has clearly demonstrated that the combination of references above teach a plasma gun

used to deposit titanium in conjunction with a sputter target formed of a particular Ti alloy with proper motivational statements used.

12. On p. 5-6, the Applicant alleges that 'pure bootstrapping' has been used by the Office. The Applicant also argues that the nature of the combination of the references has, again, not been articulated. The Applicant also alleges hindsight has been used, with the *In re Wertheim* citation unexplained.

The Examiner respectfully disagrees and is confused as to what the Applicant is attempting to invoke or imply by 'pure bootstrapping'. As stated above, modified Lee et al does not suggest the bond strength that exists between the deposited Ti alloy and the substrate. Ray et al is merely used to teach an approximate bond strength that exists between a refractory metal comprising a Ti alloy and the substrate. Ray et al also teaches the advantages of this bond strength between the Ti alloy and the substrate as being a superior hard and wear resistant coating. In response to the Applicant's argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). As stated, Ray et al teaches a bond strength between the Ti alloy and the substrate as being in excess of 100 ksi (col. 2, lines 27-30), which encompasses the Applicant's claimed range of between 100 ksi and 200 ksi.

The *In re Wertheim* citation is used to show that while Ray et al does not teach the exact range, the claimed range would still be obvious to one of ordinary skill in the art.

13. On p. 6-7, the Applicant argues that Gabriele et al has no relevance to the other references since Gabriele et al teaches a polymer coating of stainless steel. The Applicant also argues that no expectation for success has been shown by the combination.

The Examiner respectfully disagrees. As stated above, modified Lee et al is limited in that while the thickness layer of the metal is present, it is not specified as to an exact thickness for all layers. Gabriele et al teaches coating a substrate by PVD (i.e. sputtering) pf a metallic coating (abstract), with possible metallic coatings comprising Ti alloys (col. 5, lines 60-67). Gabriele et al also teaches the thickness of the metallic layer being from about 0.1 mm to about 3 mm (col. 2, lines 41-45), with it being obvious to one of ordinary skill that depositing a thickness of a layer is a user inputted variable. The expectation of success is demonstrated since Gabriele et al teaches depositing a Ti alloy at a specified thickness, which is then incorporated into modified Lee et al.

14. On p. 7, the Applicant argues that the combination of modified Lee et al and Nulman et al what the nature of the combination of the references is in addition to why one of ordinary skill would have combined has been expressed.

The Examiner respectfully disagrees. As stated above, the motivation to combine Nulman et al with modified Lee et al is for increasing deposition uniformity (col. 3, lines 1-6).

15. On p. 7-8, the Applicant argues that the Office has failed to articulate the equivalency of modified Lee et al and Harker.

The Examiner respectfully disagrees. As stated above, modified Lee et al teaches deposition of metals via plasma gun. Harker teaches that metals can be deposited by an electron beam or plasma gun, thus leading one of ordinary skill in the art that an electron beam device is equivalent to a plasma gun and therefore can be interchanged with said plasma gun to deposit metals.

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 9am-5pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./

Examiner, Art Unit 1795

/Jennifer K. Michener/

Supervisory Patent Examiner, Art Unit 1795